

# Parallel Primary Sources for Enhancing STEM Experiences



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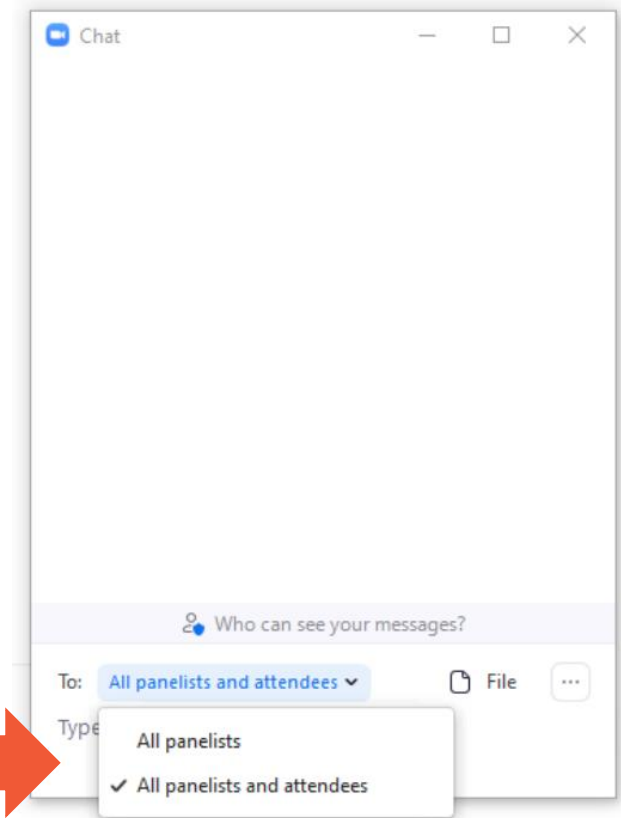
## Notice of recording

This session is being recorded. If you choose to participate, any of your comments or questions will become part of the Library's collections.

# Please introduce yourself in the chat!

- ☐ Your first name
- ☐ Where you're joining us from
- ☐ Your subject area and grade level

Please select **ALL PANELISTS AND ATTENDEES** in the To: box



# Welcome!

**Lesley Anderson, @LAnderson\_STEM**

**Peter DeCraene, @ShowTheWork**

2021-22 Albert Einstein Distinguished Educator Fellows



<https://science.osti.gov/wdts/einstein>

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# Objectives

- ❑ Connect historical documents to STEM topics, using the Observe-Reflect-Question protocol
- ❑ Use parallel primary sources to observe a phenomenon from multiple perspectives

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## Parallel Primary Sources

- Primary sources about the same or similar topics
- That provide opportunities for close examination of multiple items to make comparisons
- Focusing on multiple perspectives

# Community Response to Disasters using Parallel Primary Sources





# Community Response to Disasters using Parallel Primary Sources





## About this Item

### Title

Barber Shop located in Ninth Ward, New Orleans, Louisiana, damaged by Hurricane Katrina in 2005

### Contributor Names

Highsmith, Carol M., 1946-, photographer

### Created / Published

2006 April 13.



## About this Item

### Title

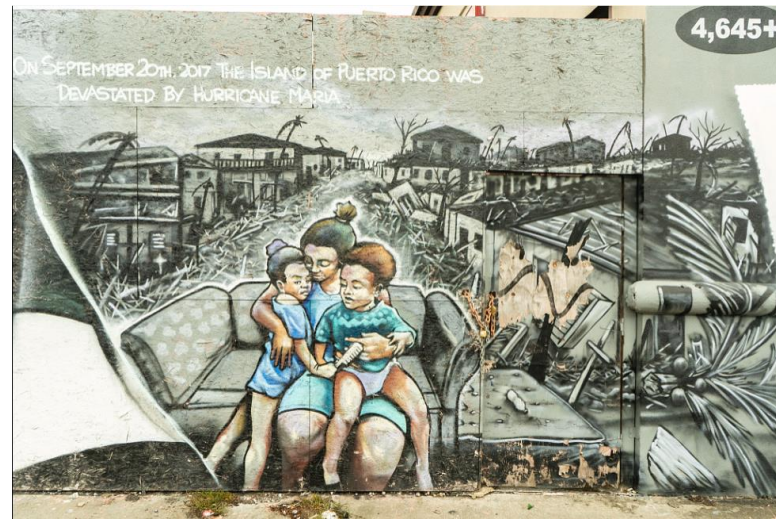
"We will rise" mural detail celebrating Puerto Rico after the 2017 Hurricane Maria. 719 Bruckner Blvd., Bronx. By Tats Cru, 2018

### Contributor Names

Vergara, Camilo J., photographer

### Created / Published

September 29, 2020.



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## Side by Side Comparisons

- Primary source analysis
- Two different perspectives
- Thinking Routine: Compare and Contrast
- Multidisciplinary approach

Barker's Stereoscopic Gems of American Scenery.



The Johnstown Calamity  
A slightly damaged house.



Copyright 1889, by Geo. Barker.

Geo. Barker, Niagara Falls, N. Y.



Barker's Stereoscopic Gems of American Scenery.



The Johnstown Calamity  
A slightly damaged house.



Copyright 1889, by Geo. Barker

Geo. Barker, Niagara Falls, N. Y.

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## Spot the Difference

- Take a look at the photos side by side - can you spot the differences between the two photographs?
- Feel free to toggle back and forth with the slides shared in the chat
- Which photo was taken first? What evidence do you have?

Barker's Stereoscopic Gems of American Scenery.



The Johnstown Calamity  
A slightly damaged house.

Barker's Stereoscopic Gems of American Scenery.



The Johnstown Calamity  
A slightly damaged house.



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# Teaching the Fossil Record

- Fossils are like snapshot in time
- Scientists work together to determine the order in which these “photographs” are taken
- As new “photos” are added to the fossil record, we have a better understanding about the sequence of events at different moments in time

# Ask a Librarian



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## Side by Side Comparisons

- Primary source analysis
- Same perspective
- Thinking Routine: Sequencing
- Nature of Science
- Content Connection: Earth Science, Evolution

# Observe Reflect Question

## Radium and Beauty

**H**ERE are the first toilet preparations to embody Actual Radium, an astonishing new force for betterment, applied as an aid to Beauty. Learn how the amazing Energy of Radium has proved a boon to the human skin. Learn what Radium actually means to Beauty and how its power is employed in "Rador" Preparations. Study our \$5,000 guarantee. Then turn to "Rador" Toilet Requisites. When you have used, enjoyed and tested them you will adopt them as your own first aid to Beauty.

**P**REHISTORIC woman first discovered her image in some quiet jungle pool. Ever since Beauty has engaged the world's attention.

Radium, though new to the world, is no less of absorbing interest. Its marvels have amazed and thrilled us all.

Who would have imagined that these two subjects would some day go hand in hand? Yet, in Radium, Science has discovered a revolutionary Beauty Secret.

Consult books on Radio-activity. Any number of them are in our public libraries. They will show you that Radium possesses an enormous power for human betterment.

The tiniest particle of Radium throws off a continuous stream of Energy Rays. An Energy never diminishing, never ceasing, day or night, year in, year out. A force a million times more powerful than any other known.

These Radium Rays are particularly valuable in effect upon the human skin. Dr. Louis Wickham and Dr. Ungerer, specialists in the St. Lazare and the St. Louis Cliniques of Paris, have proved what Radium will do for even the most troubled skin diseases.

Rays of Radium, in fact, energize and revivify any living matter with which they come in contact. They are "accepted" by the human system as harmoniously as is sunlight by the plant.

This wonderful force for betterment has now been embodied in "Rador" Toilet Requisites, thus placing the power of Radium at the command of every woman who uses a face cream or powder, hair tonic or soap.

"Rador" Toilet Requisites are delightfully dainty and distinctive. They have an exquisite

and exclusive fragrance all their own, a perfume not for sale in any market. They are the first and only preparations for the toilet to contain Actual Radium—Nature's greatest aid to Beauty.

Every "Rador" Preparation is guaranteed, under \$5,000 penalty, to contain a definite amount of Actual Radium, and to retain its Radio-activity for at least twenty years. See Guarantee above.

In England, "Rador" Preparations are a success of several years' standing. They are used by noted women of title and fashion. They are the vogue in the leading shops.

We present them to the United States as the greatest boon ever offered—to those who value perfection of complexion; rounded, youthful facial contours; a healthy skin and beautiful hair.

Each and every "Rador" Beauty Aid is the formula of a famous Parisian specialist. In fact, aside from Radium, you would choose "Rador" Preparations for themselves alone—for the silky smoothness of the cream—the impalpable fineness of the powders and the tantalizing, soothing fragrance.

When to this perfection, as toilet preparation, is added the power of Actual Radium, the highest level of Beauty Culture is reached.

From vanity "Rador" Face Powder is beautiful "Rador" Skin Soap—from delighted "Rador" Face Powder to wonderful "Rador" Hair Tonic "Rador" Toilet Requisites all contain actual Radium for Beauty's sake.

Science does not permit us to go into further details, but there are further facts concerning Radium and Beauty which every woman should know. They are contained in our booklet sent free on request.

### Rador Toilet Requisites

"Rador" Toilet Requisites are necessarily higher in price. This must be expected in preparations containing the finest ingredients only, plus a definite quantity of Actual Radium. But the greater benefits obtained from "Rador" Preparations would justify an even higher price. The best is always the cheapest and goes furthest.

It is easy to prove the superiority of "Rador" Preparations. Try them. See how smoothly the Vanishing Cream rubs in.

Notice how your complexion improves with "Rador" Poudre de Veux (night cream).

See how imperceptibly the face powder blends with the skin. How smoothly it adheres. Appreciate the soothing comfort of the Tonic. Note the effects produced by the Hair Tonic.

Enjoy the strange, elusive fragrance.

Then remember that each preparation has the power to work for betterment—the power of Actual Radium. It is easy to apply these facts.

Purchase "Rador" Toilet Requisites at any of the leading department and drug stores. If you are not delighted with them, return them with us and we will see that your money is refunded.



Rador Articles	
1. Poudre de Veux (Night Cream)	\$2
2. Poudre de Veux (Day Cream)	\$1
3. Poudre de Veux (Face Powder)	\$1
4. Poudre de Veux (Face Powder)	\$1
5. Poudre de Veux (Face Powder)	\$1
6. Poudre de Veux (Face Powder)	\$1
7. Poudre de Veux (Face Powder)	\$1
8. Poudre de Veux (Face Powder)	\$1
9. Poudre de Veux (Face Powder)	\$1
10. Poudre de Veux (Face Powder)	\$1

# Observe Reflect Question

Zoom in to  
show additional  
detail and  
prompt new  
thinking.

The tiniest particle of Radium throws off a continuous stream of Energy Rays. An Energy never diminishing, never ceasing, day or night, year in, year out. A force a million times more powerful than any other known.

These Radium Rays are particularly valuable in effect upon the human skin. Dr. Louis Wickham and Dr. Degrais, specialists in the St. Lazare and the St. Louis Hospitals of Paris, have proved what Radium will do for even the most dreaded skin diseases.

Rays of Radium, in fact, energize and revivify any living matter with which they come in contact. They are "accepted by the human system as harmoniously as is sunlight by the plant."

This wonderful force for betterment has now been embodied in "Radior" Toilet Requisites, thus placing the power of Radium at the command of every woman who uses a face cream or powder, hair tonic or soap.



Radio Articles	
Radio Articles	\$2
Radio Articles	\$1
Radio Articles	\$1
Radio Articles	\$1
Radio Articles	\$2
Radio Articles	\$1
Radio Articles	\$2
Radio Articles	\$1
Radio Articles	\$10



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## Source #2





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## Source #2

Zoom out to show additional detail and prompt new thinking.



# The Times - News

Largest Daily Circulation of Any Newspaper in North Carolina in Proportion to Population

HENDERSONVILLE, N. C., MONDAY, FEBRUARY 14, 1938

Hearing a doctor testify that she was certain to die from effects of radium poisoning, Mrs. Catherine Donohue collapsed, right, as four other women, above, also believed victims of the "living death," fearfully looked on in a courtroom at Ottawa, Ill. Mrs. Donohue, who now weighs only 70 pounds, told an arbiter for the Illinois Industrial Commission that her superiors in a radium watch dial plant at Ottawa said to her in 1931, "Your limping will cause talk. We're sorry, you'll have to go." Along with 13 other women, she seeks compensation for incapacities attributed to work with radium in the factory. Nine women already have died. The young women in the above pictures are Frances O'Connell, Margaret Glacinski, Helen Munch, and Marie Rossiter.

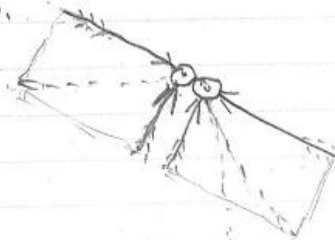
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# Sequenced Comparisons

- Primary source analysis
- Change in perspectives
- Nature of Science
- Content Connection: Chemistry, Biology

Alexander Graham  
Bell's notebook  
from May 6, 1878

Before impact  
Forces resolved into direct + tangential  
forces.

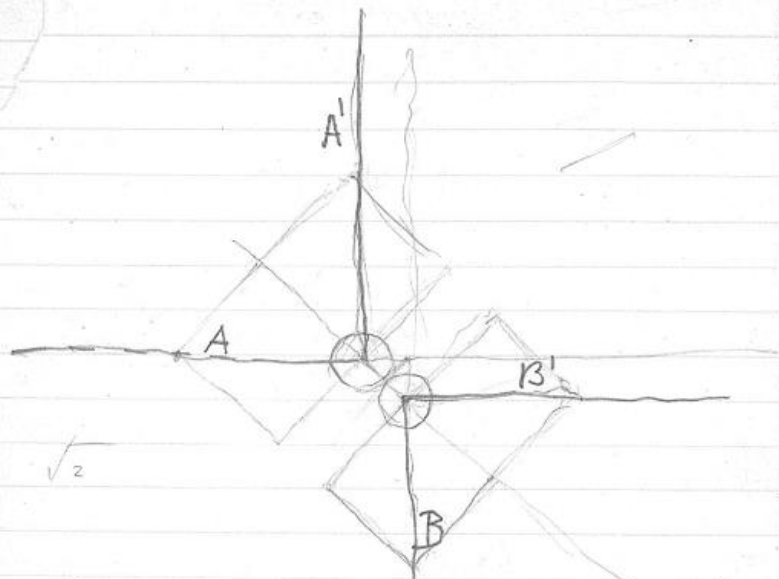


After impact. Direct + tangential  
forces in dark lines. Resultant motion  
 $R + R'$  Original motion in dotted line.



See over

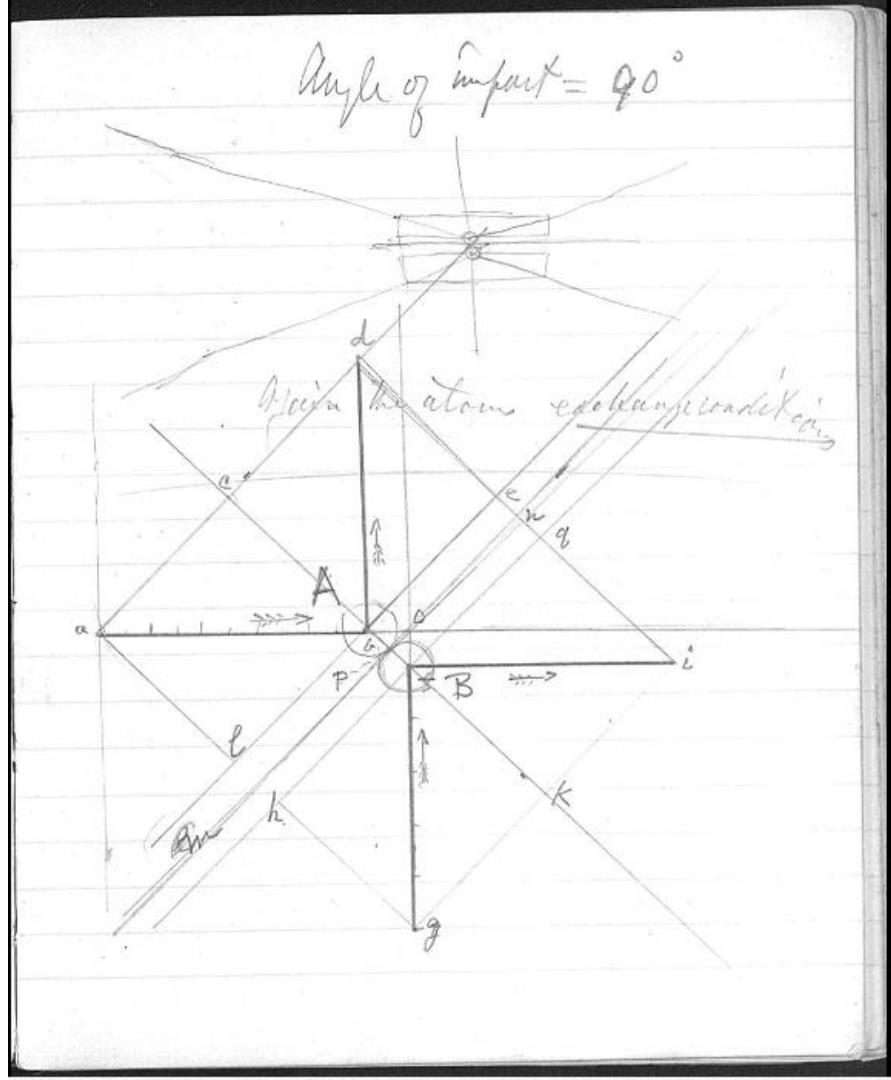
Alexander Graham  
Bell's notebook  
from May 6, 1878



Original direction of  $A \times B = A \times B$   
Final direction of  $A \times B = A' \times B'$

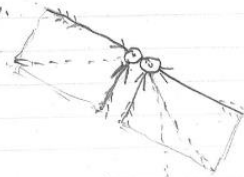
Again the atoms ~~upon~~ <sup>after</sup> impact  
exchange conditions.

# Alexander Graham Bell's notebook from May 6, 1878





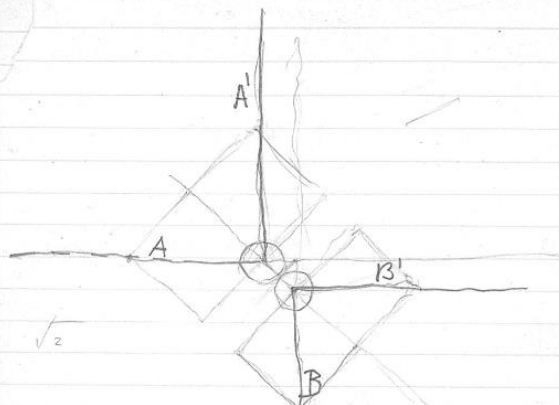
Before impact  
Forces resolved into direct + tangential  
forces.



After impact. Direct + tangential  
forces in dark lines. Resultant motion  
 $R + R'$  Original motion in dotted line.



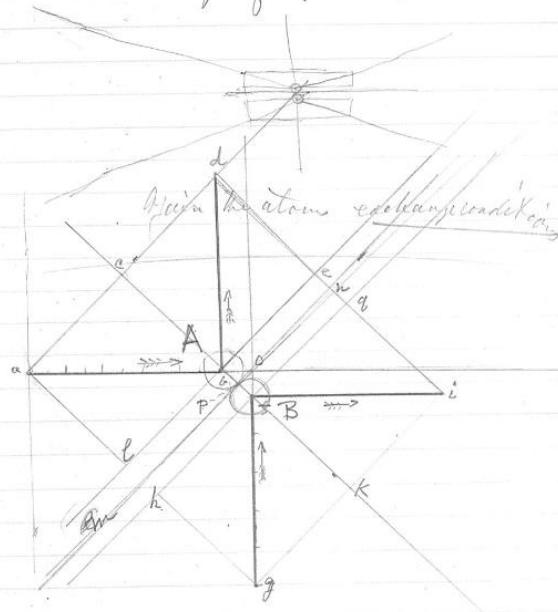
See over



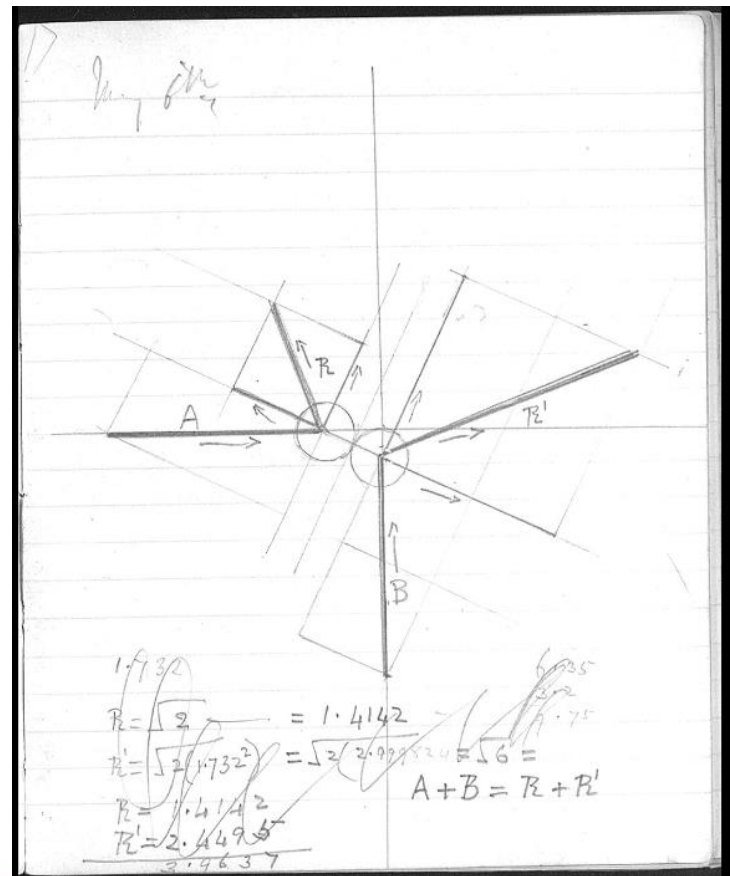
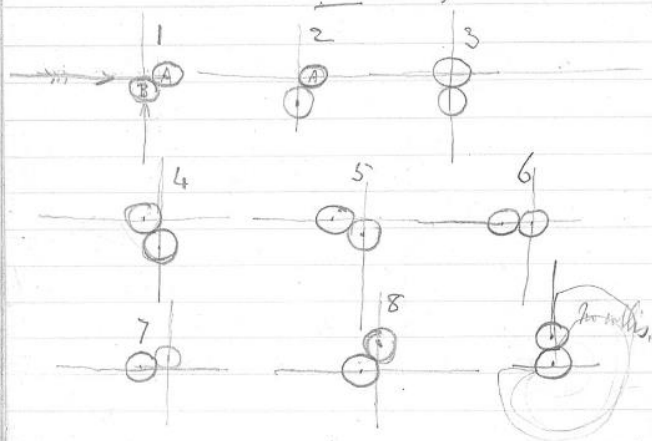
Original direction  $A \times B = A \times B$ ,  
Final direction  $A \times B = A' \times B'$

Again the atoms <sup>whose</sup> after impact  
exchange conditions.

Angle of impact =  $90^\circ$



Investigate following cases



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# Sequenced Comparisons

- Primary source analysis
- Evolving perspective
- Nature of STEM
- Content Connection: Physics, Engineering, Math

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## Summary

- The **Observe-Reflect-Question** protocol invites students to engage with primary sources, and connects STEM ideas across the curriculum.
- Parallel Primary Sources provide multiple and evolving perspectives for students to ...
  - ◆ compare, contrast, and sequence ideas
  - ◆ understand the nature of STEM fields

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# Thank you!

For joining us today  
and sticking with your students these last two years!

## Questions?

- Library of Congress: <https://loc.gov/>
- Ask a Librarian: <https://ask.loc.gov/>
- Teacher Resources: <https://www.loc.gov/programs/teachers>
- Teacher Blog: <http://blogs.loc.gov/teachers/>

Lesley Anderson: [landerson@loc.gov](mailto:landerson@loc.gov)

Peter DeCraene: [pdecraene@loc.gov](mailto:pdecraene@loc.gov)

# Resources

- Community Response to Disasters
  - Barber Shop located in Ninth Ward: <https://www.loc.gov/item/2010630024/>
  - “We will rise” mural: <https://www.loc.gov/item/2020637196/>
- Slightly Damaged House
  - Image #1: <https://www.loc.gov/resource/stereo.1s09424/>
  - Image #2: <https://www.loc.gov/resource/ppmsca.51087/>
  - Image #3: <https://historicpittsburgh.org/islandora/object/pitt%3A20190919-hpjaha-0031>
- Radium
  - And Beauty: <https://chroniclingamerica.loc.gov/lccn/sn83030214/1918-11-10/ed-1/seq-54/>
  - Poisoning: <https://chroniclingamerica.loc.gov/lccn/sn86063811/1938-02-14/ed-1/seq-1/>
- Alexander Graham Bell Notebook
  - Image 34: <https://www.loc.gov/resource/magbell.29800101/?sp=34>
  - Image 35: <https://www.loc.gov/resource/magbell.29800101/?sp=35>
  - Image 36: <https://www.loc.gov/resource/magbell.29800101/?sp=36>
  - Image 37: <https://www.loc.gov/resource/magbell.29800101/?sp=37>
  - Image 38: <https://www.loc.gov/resource/magbell.29800101/?sp=38>